DETAILED ACTION

Response to Amendment

The amendment filed on 4/28/2008 has been received and claims 1-2 are pending.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ko (WO 01/70281) in view of Caputo (6261518).

Ko ('281) discloses a plasma sterilization apparatus (see Figure 1), comprising:

a sterilization chamber (1) for receiving therein a sterilization object (9);

a high frequency power source (8) (see p.9 lines 21-22 and 25-26) connected to a cathode (3), for generating optimal plasma under control of both an impedance matching controller (7) and an impedance matching circuit (6), the cathode (3) being installed along with an anode (2) at a predetermined distance (see Figure 1), in the sterilization chamber (1);

an injection heater (5) for vaporizing and injecting a hydrogen peroxide solution in mixture with air into the sterilization chamber (1) (see entire document, particularly p.7 lines 2-6 and 10-14 and p.8 lines 25—27); and

a vacuum pump (11), connected through an exhaust pipe (see Figure 1) to the sterilization chamber (1), for extracting air from the sterilization chamber (1) to form a vacuum state in the sterilization chamber (1).

Ko ('281) does not appear to specifically teach that the exhaust pipe is equipped with a dehumidifier for freeze-condensing the water vapor in the gas flowing through the exhaust pipe to prevent the entry of the water vapor into the vacuum pump.

Caputo ('518) discloses a sterilization chamber (312) (see entire document, particularly Col. 13 lines 27-36, specifically lines 27-30) where the exhaust pipe (322, 324) that connects the sterilization chamber (312) to a vacuum pump (316) is equipped with a dehumidifier (314; wherein the condenser acts as a dehumidifier) in order to remove water vapor from the sterilization chamber and flowing through the exhaust pipe (322) by condensing the water vapor (see Col. 13, lines 6-8; as the condenser is placed before the vacuum pump, the entry of water vapor into the vacuum pump is prevented).

It was known in the art at the time of invention to place a dehumidifier before a vacuum pump in association with a vacuum chamber used in sterilization. It would have been obvious to one of ordinary skill in this art at the time of invention to provide a dehumidifier in the form of a condenser in the device of Ko in order to remove water vapor exiting from the vacuum sterilization chamber as shown by Caputo.

Thus, Claim 1 would have been obvious within the meaning of 35 U.S.C. 103(a) over the combined teachings of Ko ('281) and Caputo ('518).

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ko (WO 01/70281) in view of Caputo (6261518) as applied to claim 1 above, and further in view of Bagley (6519956) or Kametani (6250095).

Ko ('281) and Caputo ('518) are relied upon for disclosure described in the rejection of claim 1 under 35 U.S.C. 103(a).

While Caputo ('518) discloses use of a condenser as a dehumidifier, neither Ko ('281) nor Caputo ('518) appears to specifically teach that said dehumidifier forms a freezing cycle which is further comprised of a compressor, a freezer and an expansion valve, in addition to the condenser.

It was well known in the art at the time of invention to use a dehumidifier to remove water from an air stream. Bagley ('956) discloses that it was known in the art for a dehumidifier which is comprised of a compressor (1), a condenser (2), an expansion valve (3; see Col. 2, lines 43-44) and a freezer (4) forming a freezing cycle (see Col. 1, lines 16-67 through Col. 2, lines 1-12) in order to dry/remove water from air (see Col. 1, lines 21-23 and Col. 2, lines 13-14). Kametani ('095) also exemplifies a dehumidifier (18) (see entire document, particularly Figure1) for a chamber (9) comprised of a compressor (44), a condenser (45), an expansion valve (47) and a freezer (48), the freezer (48) being housed in a housing connected to an exhaust pipe (25) (see Figure 5, where the evaporator coils of the evaporator are located within a housing of 48), in order to enhance dehumidifying efficiency (see entire document, particularly Col. 3 lines 5-6).

It would have been obvious to one of ordinary skill in this art at the time of invention to provide a dehumidifier comprised of a compressor, a condenser, an expansion valve and a freezer/evaporator in the exhaust pipe in the device of Ko in order to dry/remove water from the air stream as shown by Bagley. It would also have been well within the purview of one of ordinary skill in the art to provide the freezer/evaporator in a housing that is then connected to the exhaust pipe in order to collect the water condensed from air stream on the exterior of the freezer/evaporator so as to ensure that all the water is collected for convenient removal and that all condensed water will not reenter the treated/dehumidified air stream to reach the vacuum pump located further downstream. Only expected results would be attained.

Or, It would have been obvious to one of ordinary skill in this art at the time of invention to provide a dehumidifier comprised of a compressor, a condenser, an expansion valve and a freezer/evaporator, the freezer being housed in a housing connected to an exhaust pipe in the device of Ko in order to enhance dehumidifying efficiency of the dehumidifier as exemplified by Kametani.

Thus, Claim 2 would have been obvious within the meaning of 35 U.S.C. 103(a) over the combined teachings of Ko (‘281), Caputo (‘518) and Bagley (‘956) or Kametani (‘095).

Response to Arguments

4. Applicant's arguments with respect to the reference of Spencer in regards to claims 1-2 have been considered but are moot in view of the new ground(s) of rejection.

5. Applicant's arguments filed 4/28/2008 have been fully considered but they are not persuasive.

Specifically, Applicant's argument regarding the reference of Caputo that "only system that teaches a condenser is the system that includes a lyophilizer chamber…[and that] condenser (314) is provided…to remove the water by-products resulting from freeze-drying of the pharmaceuticals, not for removing water by-products from the sterilization gas…[so that] Caputo fails to teach that the condenser is provided to prevent entry of water vapor into the vacuum pump", Examiner would point to MPEP § 2114 which states that "claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function" where "a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitation". Thus, Examiner would disagree with Applicant and point out that structurally the reference of Caputo meets the limitations and is capable of removing water vapor within the sterilization gas flowing out from the sterilization chamber that will prevent entry of water vapor into the vacuum pump. Moreover, as Caputo discloses that the lyophilizer chamber is a sterilization chamber (see Col. 13 lines 27-29), Examiner disagrees with Applicant's statement that Caputo only exemplifies "the use of a condenser with a lyophilizer chamber, not a sterilization chamber".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REGINA YOO whose telephone number is (571)272-6690. The examiner can normally be reached on Monday-Friday, 10:00 am - 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on 571-272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elizabeth L McKane/
Primary Examiner, Art Unit 1797

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